Public Health Watch

A BI-MONTHLY PUBLIC HEALTH NEWSLETTER OF THE
METROPOLITAN HEALTH DEPARTMENT OF NASHVILLE AND DAVIDSON COUNTY, TENNESSEE

Volume 7, Number 1 ISSN - 1009 - 7423 January/February 2003

Introducing the

NASHVILLE PUBLIC HEALTH ALERT NETWORK

A Public Health Emergency Communication Resource for Health Care Professionals in Nashville and Davidson County, Tennessee

Jon Warkentin, MD, MPH, Director, Bureau of Communicable Disease Control and Prevention

Imagine a day in public health beginning in this way:

> …It's ten-thirty on Tuesday morning and an unusually sunny, clear and cold winter day in Nashville, Tennessee. For the past hour the Executive Management Team (EMT) of Metro Public Health Department (MPHD) has been convening as usual for their weekly meeting in the Director's Conference Room. Suddenly, the Nextel phones of everyone in the room start ringing simultaneously. Within seconds everyone around the table reads the OP-CON Level 8 Alert from the Office of Emergency Management: "Railroad car exploded in 'gulch' downtown at 10:20 a.m. Large vapor cloud, unknown substance. Many casualties. Likely WMD." Incredulous, stunned looks are traded around the room, even as the Director of Health, Dr. Bailey, instructs the EMT to immediately implement the department's Weapons of Mass Destruction (WMD) response plan. As Dr. Bailey, Dr. Warkentin, and Pam Trotter drive to the Incident Command vehicle at the blast site, the Domestic Preparedness Team springs into action to alert hospitals and health care providers across the area…

Until recently, an unthinkable event such as this scenario in Nashville would overwhelm the capacity of MPHD to alert hospitals and health care providers using a slow and cumbersome "blast-fax" system, sequentially sending the same

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In This Issue:

Perinatal Periods of Risk: A New Approach to an Age Old Problem, Part II

Brook McKelvey, MA, MPH, Maternal Child Health Epidemiologist

In the last issue of *Public Health Watch*, data was presented concerning infant mortality in Davidson County. From this data, it was shown that Davidson County continues to have unacceptably high rates of infant mortality, and the disparity between the white and black infant mortality rates is increasing with time.

As part of the solution to this chronic problem, Davidson County has been involved with a national pilot project called the Perinatal Periods of Risk (PPOR). In the second part of this discussion, a brief description of this new analytic tool will be presented along with an explanation of how it can be used to improve our understanding of infant mortality in Davidson County.

PPOR analysis begins with the creation of a feto-infant mortality map. As shown in Figure 1, the feto-infant mortality map consists of two dimensions: age at death and birth weight.

Age at death is a universally accepted indicator for examining infant mortality. There is a tremendous amount of growth and development that occurs throughout pregnancy and after birth, and such development

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usually follows a predictable pattern. Risk factors acting upon the developmental process at specific time intervals can yield predictable adverse outcomes. From observations such as these, neonatal (< 28 days) and postneonatal (28 - 364 days) age groupings were defined and came into common usage within the Maternal and Child Health (MCH) community.[1] Such groupings not only improved scientific understanding, but also labeled windows of opportunity for intervention.[1]

Birth weight is recognized as the strongest predictor of survival. Put simply, small babies have a higher risk of mortality than babies of normal weight. It has been estimated, for example, that a neonate less than 2,500 grams is 40 times more likely to die than a neonate 2,500 grams or more. The risk increases to 200 times greater for neonates born weighing less than 1,500 grams.[2]

As illustrated in Figure 2, combining age at death and birth weight yields the two-dimensional map of feto-infant mortality. The three categories for age at death are fetal, neonatal, and postneonatal. Birth weight is divided into two categories: less than 1,500 grams, referred to as very low birth weight (VLBW), and 1,500 grams or more, referred to as higher birth weight (HBW). The end result is a 2 by 3 matrix of 6 cells. Deaths are then partitioned into the correct cell.

These six cells are then clustered into four primary groupings, as illustrated in Figure 3. First, the 500 to 1,499 gram fetal, neonatal, and postneonatal deaths become one group. The HBW cells form the three remaining groups. Each of these four groups is given a label that suggests the primary preventive direction for the deaths in that group. For example, VLBW related deaths could best be prevented by addressing maternal health issues and preventing and treating prematurity. For HBW related deaths, fetal deaths can best be prevented by providing maternal care; neonatal deaths, by providing newborn care; and postneonatal deaths, by improving infant health.

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Figure 1. PPOR Two-dimensional Framework

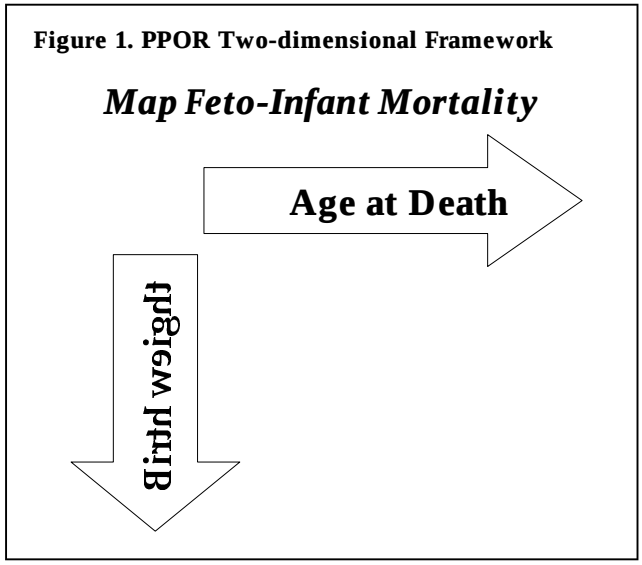


Figure 2. PPOR Feto-infant Mortality Map

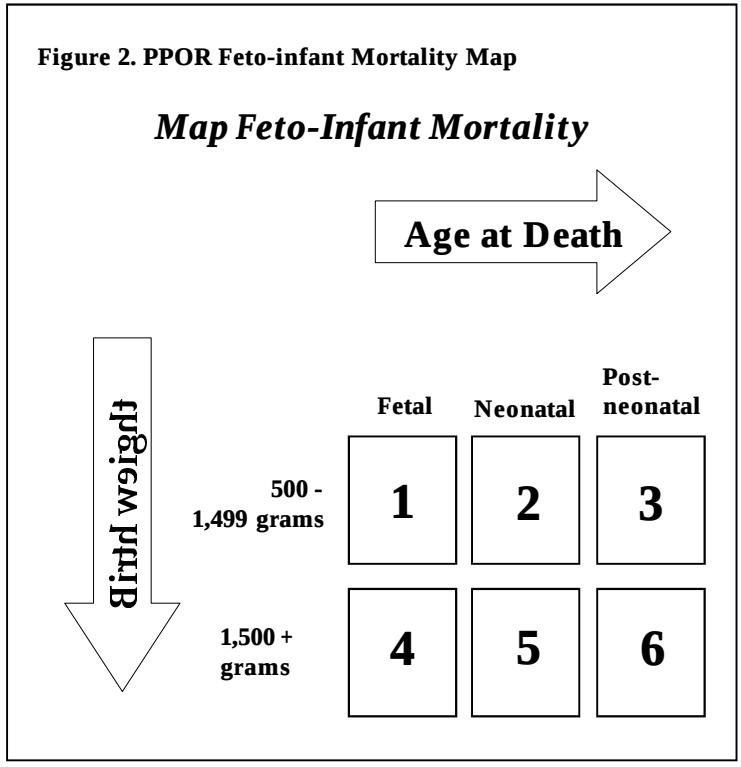


Figure 3. Final PPOR Feto-infant Mortality

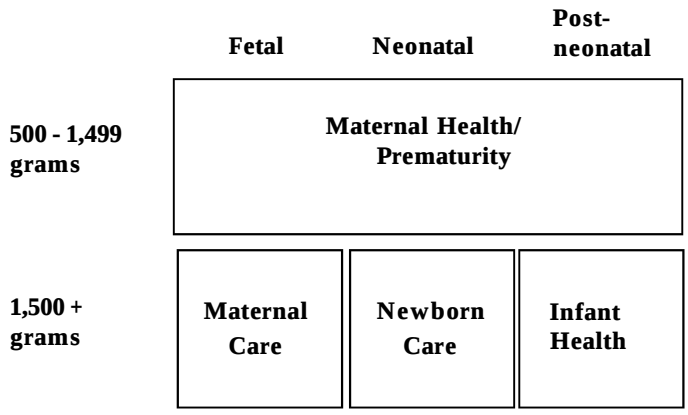
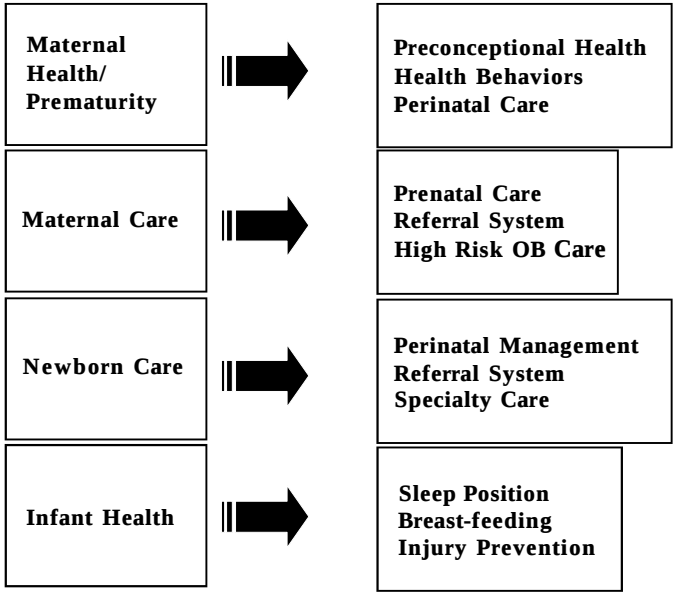


Figure 4. Categorical Connections to Action



The category labels were designed to suggest preventative action. (See Figure 4.) For maternal health and prematurity, prevention may focus on preconceptional health, unintended pregnancy, smoking, and drug abuse. Issues related to maternal care may need a preventative focus on early and continuous prenatal care, referral of high-risk pregnancies, and good medical management of underlying conditions. For newborn care, the focus may be on advanced neonatal care and the treatment of congenital anomalies. Lastly, to address infant health issues, communities may need to focus on Sudden Infant Death Syndrome (SIDS) prevention activities such as sleep position education or injury prevention.

In summary, the PPOR analytic tool is a simple population-based approach used to examine the distribution of fetal and infant deaths by birth weight and age at death. Communities can utilize this approach to identify the most appropriate period for intervention for their community as well as the types of interventions that would be most effective, and thereby reduce fetal and infant mortality. In Part III of this series, the results of applying the PPOR approach to Davidson County data will be presented.

References:

1. Bennett T, Kotelchuck M. Mothers and Infants. In: Kotch JB, ed. *Maternal and Child Health: Programs, Problems, and Policy in Public Health.* Gaithersburg, MD: Aspen Publishers, 1997.
2. Kiely JL, Brett KM, Yu S, Rowley DL. Low birth weight and intrauterine growth retardation. In: Wilcox LS, Marks JS, eds. *From Data to Action: CDC's Public Health Surveillance for Women, Infants, and Children.* U.S. Department of Health and Human Services, 1995. Pp. 185-202.

message to multiple fax numbers. But in the wake of the disaster in New York City on September 11, 2001, strategic planners of the Health Department's Domestic Preparedness Team determined that the "blast-fax" technology was inefficient and quite inadequate to the task. The Department needed to develop capacity to communicate rapidly, efficiently, and predictably during any major public health emergency — with the broader health care community, with MPHD staff, and with community public health volunteers.

The result is the ***Nashville Public Health Alert Network (NPHAN),*** scheduled to become operational in February, 2003. This unique system was developed as a collaborative effort of MPHD staff in Notifiable Disease Control, Information Systems, and Link2Gov, a communication systems contractor. NPHAN employs the latest in communications technology and software design melded into a system with three functional components: (1) a publicly accessed home page; (2) an alert message system with subscriber database; and (3) a secure website for providing limited access to confidential true emergency information.

The NPHAN home page will be readily accessible to anyone on the Internet. This page will offer periodically updated news on domestic preparedness and public health, with multiple links to other websites dedicated to community education and health care professional training resources. It will also provide links to local, state, and federal agencies that may be involved in responding to such emergencies.

The second component of NPHAN allows MPHD to rapidly and simultaneously alert health care providers through multiple communication modalities — including pager, voicemail, fax, and email. During a significant local public health emergency, within minutes subscribing providers would receive a coded alert directing them to visit the NPHAN website for further information. MPHD can also use NPHAN to direct Health Department staff to the website for assignments in a variety of emergent situations, from snowstorms that paralyze the region, to major public health emergencies. This internal function will use the same confidential access format that will safeguard each employee's personal contact information. And finally,

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Sample Screen from the Nashville Public Health Alert Network

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NPHAN can accommodate a database of community public health volunteers and coordinate their responses during an emergency.

How will the NPHAN website present emergency information? During the scenario presented above, for example, subscribing providers would receive a "severe" emergency alert code directing them to immediately access the NPHAN website. These providers, or a staff person they have designated, will immediately log on at the NPHAN home page with their unique username and password. This action gains access to the confidential and secure area of the website that provides timely and critical details about the public health emergency. Through this site, NPHAN can present emergency information combining narrative text, photographs, diagrams, maps linked to GIS analysis, and links to specific triage or treatment guidelines. In the early minutes after a WMD event, the Health Department will use critical field information to develop a list of suspected or confirmed threat agents, and quickly share that information with hospital emergency department staff — giving them precious minutes to prepare appropriate treatment for casualties. Providers in other health care settings, such as private practices, clinics, and urgent care centers, will be prepared to encounter both casualties and, inevitably, the "worried well" patients. As the emergency situation evolves, reports from the field will continue to flow into the Health Department's emergency response center, which can update the provider-accessed website on a minute-to-minute basis.

The Domestic Preparedness Team aims to formally introduce NPHAN to both MPHD staff and to the broader health care community in the next few weeks. We look forward to your participation and comments. For more information , contact Dr. Jon Warkentin at 615-340-5655.

February Is American Heart Month

According to the American Heart Association:

- In the U.S. in 2000, 1 of every 2.5 deaths was due to cardiovascular disease (CVD).
- Since 1900, CVD has been the No. 1 killer in the U.S. every year but 1918.
- Nearly 2,600 Americans die of CVD each day, an average of 1 death every 33 seconds.
- CVD claims more lives each year than the next 5 leading causes of death combined.
- Almost 150,000 Americans killed by CVD each year are under the age of 65.
- In 2000, 32 percent of deaths from CVD occurred prematurely, i.e., before age 75.
- According to the Centers for Disease Control and Prevention and the National Center for Health Statistics, if all forms of major CVD were eliminated, life expectancy would rise by almost 7 years. If all forms of cancer were eliminated, the gain would be 3 years. According to the same study, the probability at birth of eventually dying from major CVD is 47 percent, and the chance of dying from cancer is 22 percent.

Source: American Heart Association. Accessed at: www.americanheart.org/presenter.jhtml?identifier=3000090 on February 5, 2003.

Mission of *Public Health Watch*

Public Health Watch's mission is to promote improvement of the health of the public in Davidson County by:

- Producing a newsletter that is timely, credible, easy to read, and that addresses a broad range of public health topics of interest to the Davidson County community;
- Disseminating information regarding community health status in Davidson County;
- Promoting awareness of public health initiatives;
- Providing a forum for practitioners of public health and concerned citizens to discuss issues of public health importance;
- Educating a diverse readership on the importance of public health efforts to protect personal and environmental health.

Index to Articles in *Public Health Watch* 2002

Editor's Note: The following is a listing of articles by issue, title, author, and page number for year 2002.

Index to Articles in *Public Health Watch* 2002

Reported Cases of Selected Notifiable Diseases for November/December 2002

Disease	Cases Reported in November/December		Cumulative Cases Reported through December	
	2001	2002	2001	2002
AIDS	23	16	197	218
Campylobacteriosis	4	1	40	33
Chlamydia	332	331	2,089	2,117
DRSP (Invasive drug-resistant *Streptococcus pneumoniae*	7	1	28	20
Escherichia coli 0157:H7	0	0	4	5
Giardiasis	4	0	25	33
Gonorrhea	236	219	1,639	1,390
Hepatitis A	6	1	44	18
Hepatitis B (acute)	7	1	30	18
Hepatitis B (perinatal)	5	1	18	24
HIV	33	34	311	314
Influenza-like Illness	4	3	135	229
Neisseria meningitidis disease	0	0	7	5
Salmonellosis	18	6	69	63
Shigellosis	1	1	8	12
Syphilis (primary and secondary)	3	3	77	26
Tuberculosis	11	7	67	64
VRE (Vancomycin-resistant enterococci)	8	2	60	53

To report a notifiable disease, please contact:

Sexually transmitted diseases: Brad Beasley at 340-5676
AIDS/HIV: Mary Angel-Beckner at 340-5330
Hepatitis B: Denise Stratz at 340-2174
Tuberculosis: Diane Schmitt at 340-5650
Hepatitis C: Pat Sanders at 340-5632
Vaccine-preventable diseases: Mary Fowler at 340-2168
All other notifiable diseases: Pam Trotter at 340-5632

Return Service Requested

Public Health Watch welcomes feedback, articles, letters, and suggestions. To communicate with *Public Health Watch* staff, please:
Telephone: (615) 340 - 5683
Fax: (615) 340 - 2110
E-mail: nancy.horner@nashville.gov